

WHAT IS CLAIMED IS:

1. An operational amplifier with an input terminal and an output terminal, said operational amplifier comprising:

5 a differential amplifying circuit configured to amplify an input voltage inputted from the input terminal;

an outputting transistor connected to the output terminal;

10 a driving transistor connected to the differential amplifying circuit and the outputting transistor, said driving transistor turning on according to a control signal and configured to drive the outputting transistor according to the control signal, said control signal being supplied from the differential amplifying circuit to the driving circuit; and

15 a control signal reducing circuit, when a voltage is applied on the driving transistor through the outputting transistor, configured to reduce the control signal within a range that the driving transistor is kept to on state, said voltage applied on the driving transistor exceeding a predetermined threshold voltage.

20 2. The operational amplifier according to claim 1, wherein said driving transistor has control terminals and an output terminal, and said control signal reducing circuit comprises:

a voltage detecting circuit connected to the driving transistor and configured to output a detection signal when the voltage applied on the driving transistor exceeds the threshold voltage; and

25 a control signal regulating circuit connected between the control terminals of the driving transistor, said control signal regulating circuit

being configured to, when the voltage detecting circuit outputs the detection signal, negate a part of the control signal supplied from the differential amplifying circuit.

5 3. The operational amplifier according to claim 2, wherein said voltage detecting circuit is configured to regulate the voltage applied on the driving transistor so that the applied voltage does not exceed the threshold voltage.

10 4. The operational amplifier according to claim 2, wherein said control signal regulating circuit is configured to relieve a part of the control signal to a ground of the operational amplifier according to the detection signal, said control signal being supplied from the differential amplifying circuit.

15 5. The operational amplifier according to claim 2, wherein said outputting transistor has a first terminal, a second terminal and a third terminal, said first terminal is connected to the output terminal, and further comprising a current regulating circuit connected between the
20 output terminal of the driving transistor and the second terminal of the outputting transistor.

 6. The operational amplifier according to claim 5, wherein said voltage detecting circuit comprises a Zenner diode and a diode, an anode of
25 said Zenner diode and that of said diode being commonly connected to each other, a cathode of said Zenner diode being connected to the output

terminal of the driving transistor, a cathode of said diode being connected to one of the control terminals of the driving transistor, and wherein said control signal regulating circuit includes a transistor having a first terminal, a second terminal and a third terminal, said first terminal of the transistor
5 being connected to the commonly connected point between the anodes of the Zener diode and the diode, said second terminal being connected to one of the control terminals of the driving transistor, said third terminal being connected to other of the control terminals of the driving transistor.

10 7. The operational amplifier according to claim 1, wherein said outputting transistor and the driving transistor are bipolar transistors, respectively.

 8. The operational amplifier according to claim 1, wherein said
15 outputting transistor and the driving transistor are field effect transistors, respectively.